

Applicants: Ash et al.  
For: BOREHOLE NAVIGATION SYSTEM

### ABSTRACT OF DISCLOSURE

An omnidirectional borehole navigation system is provided which features a housing for traversing a borehole; a gimbal system including at least one outer gimbal connected to the housing and at least one inner gimbal nested in and connected to the outer gimbal; a solid state three-axis gyro assembly mounted on the inner gimbal; a solid state three-axis accelerometer assembly mounted on the inner gimbal; gyro logic circuits on the inner gimbal responsive to the three-axis gyro assembly to produce the inertial angular rate about each gyro input axis; accelerometer logic circuits on the inner gimbal to produce the non-gravitational acceleration along each accelerometer input axis; and a microprocessor responsive to the gyro logic circuits and the accelerometer logic circuits for determining the attitude and the position and velocity of the housing in its borehole.